

L Number	Hits	Search Text	DB	Time stamp
1	24578	429/\$.ccls.	USPAT; US-PGPUB	2002/04/24 18:34
2	103	429/322.ccls.	USPAT; US-PGPUB	2002/04/24 18:34
3	9	429/322.ccls. and (hf or hydrofuric)	USPAT; US-PGPUB	2002/04/24 18:35
4	0	429/\$.ccls. and (hydrofuric)	USPAT; US-PGPUB	2002/04/24 18:35
5	15	429/\$.ccls. and (hydrofur\$6)	USPAT; US-PGPUB	2002/04/24 18:36
6	351	429/\$.ccls. and (lithium adj hexafluorophosphate)	USPAT; US-PGPUB	2002/04/24 18:36
7	3	(429/\$.ccls. and (lithium adj hexafluorophosphate)) and (hf adj acid)	USPAT; US-PGPUB	2002/04/24 18:38
9	11	(429/\$.ccls. and (lithium adj hexafluorophosphate)) and (hydrogen adj fluoride)	USPAT; US-PGPUB	2002/04/24 18:38
8	2	429/322.ccls. and (hydrogen adj fluoride)	USPAT; US-PGPUB	2002/04/24 18:39
10	10	((429/\$.ccls. and (lithium adj hexafluorophosphate)) and (hydrogen adj fluoride)) not (429/322.ccls. and (hydrogen adj fluoride))	USPAT; US-PGPUB	2002/04/24 18:43
11	1	(429/322.ccls. and (hydrogen adj fluoride)) and solid	USPAT; US-PGPUB	2002/04/24 18:43
12	1	(429/322.ccls. and (hydrogen adj fluoride)) and non	USPAT; US-PGPUB	2002/04/24 18:46
13	1	6033808.URPN.	USPAT	2002/04/24 18:45
14	9	("3887618"   "4053571"   "4065550"   "4157376"   "4308324"   "4374910"   "5215684"   "5378445"   "5434301").PN.	USPAT	2002/04/24 18:45
15	8	((("3887618"   "4053571"   "4065550"   "4157376"   "4308324"   "4374910"   "5215684"   "5378445"   "5434301").PN.) and (aqueous or nonaqueous or solid)	USPAT; US-PGPUB	2002/04/24 18:47
16	1	6001325.pn.	USPAT; US-PGPUB	2002/04/24 18:49
17	523	429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls.	USPAT; US-PGPUB	2002/04/24 18:49
18	14	(429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o"))	USPAT; US-PGPUB	2002/04/24 18:55
19	9	((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")))) and (ppm ppb concentration "parts per")	USPAT; US-PGPUB	2002/04/24 18:50
20	32	(429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((water or moisture or "h.sub.2 o") near5 (ppm or ppb or concentration or "parts per"))	USPAT; US-PGPUB	2002/04/24 18:56
21	31	((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((water or moisture or "h.sub.2 o") near5 (ppm or ppb or concentration or "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")))) and (ppm ppb concentration "parts per"))	USPAT; US-PGPUB	2002/04/24 18:56
22	5	((((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((water or moisture or "h.sub.2 o") near5 (ppm or ppb or concentration or "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")))) and (ppm ppb concentration "parts per")))) not (li or lithium)	USPAT; US-PGPUB	2002/04/24 18:56

23	26	(((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((water or moisture or "h.sub.2 o") near5 (ppm or ppb or concentration or "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")))) and (ppm ppb concentration "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((water or moisture or "h.sub.2 o") near5 (ppm or ppb or concentration or "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")))) and (ppm ppb concentration "parts per")))) not ((li or lithium))	USPAT; US-PGPUB	2002/04/24 18:57
24	242	((li or lithium) same (hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")	USPAT; US-PGPUB	2002/04/24 19:03
25	42	((li or lithium) same (hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")) and 429/\$.ccls.	USPAT; US-PGPUB	2002/04/24 18:58
26	42	(((li or lithium) same (hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")) and 429/\$.ccls.) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((water or moisture or "h.sub.2 o") near5 (ppm or ppb or concentration or "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")))) and (ppm ppb concentration "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((water or moisture or "h.sub.2 o") near5 (ppm or ppb or concentration or "parts per")))) not (((429/188.ccls. 429/300.ccls. 429/321.ccls. 429/322.ccls. 429/323.ccls. ) and ((hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")))) and (ppm ppb concentration "parts per")))) not ((li or lithium)))	USPAT; US-PGPUB	2002/04/24 18:58
27	400	((li or lithium) and (hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")	EPO; JPO; DERWENT; IBM_TDB	2002/04/24 19:09
28	49	((li or lithium) and (hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")	EPO; JPO; IBM_TDB	2002/04/24 19:04
29	351	((li or lithium) and (hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o")) not ((li or lithium) and (hf or hydrofluoric or "hydrogen fluoride") same (water or moisture or "h.sub.2 o"))	EPO; JPO; DERWENT; IBM_TDB	2002/04/24 19:09
30	1	2000-073761.NRAN.	DERWENT	2002/04/24 19:16
31	1	1999-458184.NRAN.	DERWENT	2002/04/24 19:20

W.

WO 01/73884 AI

INTERNATIONAL SEARCH REPORT

for same disclosure

International application No.

PCT/JP01/01135

PCT

A. CLASSIFICATION OF SUBJECT MATTER  
Int.Cl<sup>7</sup> H01M10/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
Int.Cl<sup>7</sup> H01M10/40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Jitsuyo Shinan Koho 1926-1996 Jitsuyo Shinan Toroku Koho 1996-2001  
Kokai Jitsuyo Shinan Koho 1971-2001 Toroku Jitsuyo Shinan Koho 1994-2001

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP, 2000-77103, A (Hitachi, Ltd.), 14 March, 2000 (14.03.00), Claims 1 to 4, 8 to 10, 14, 15 & WO, 00/13251, A	1, 2, 17-19, 22, 24-28
A		3-16, 20, 21, 23
X	JP, 11-273683, A (The Furukawa Electric Co., Ltd.), 08 October, 1999 (08.10.99), Claims 3, 4; column 5, lines 36 to 41 (Family: none)	1-5, 17-19, 25-28
X	JP, 11-67233, A (Japan Storage Battery Co., Ltd.), 09 March, 1999 (09.03.99), Claims 1, 2 (Family: none)	1, 5, 17-19, 25-28
X	JP, 9-139233, A (Denso Corporation), 27 May, 1997 (27.05.97), Claim 1 (Family: none)	1-4, 17-19, 25-28
X	JP, 11-126633, A (Samsung Display Devices Co., Ltd.), 11 May, 1999 (11.05.99), Claims 1, 7, 8 & GB, 2328786, A	1, 15-19, 25-28

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:  
"A" document defining the general state of the art which is not considered to be of particular relevance  
"E" earlier document but published on or after the international filing date  
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
"O" document referring to an oral disclosure, use, exhibition or other means  
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
"&" document member of the same patent family

Date of the actual completion of the international search  
17 May, 2001 (17.05.01)

Date of mailing of the international search report  
29 May, 2001 (29.05.01)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

Pub

by

Same

Invention

entity

Diff

Invention

entity

10/4/01

Date  
of  
Pub

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP01/01135

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP, 6-60877, A (Sanyo Electric Co., Ltd.), 04 March, 1994 (04.03.94), Claims 1, 4; column 3, lines 2 to 10 (Family: none)	1, 15-19, 25-28
X	JP, 11-16602, A (Toyota Central Research and Development Laboratories, Inc.), 22 January, 1999 (22.01.99), Claim 1 (Family: none)	1, 17-20, 23-28
X	JP, 2000-12080, (Mitsui Chemicals, Ltd.), 14 January, 2000 (14.01.00), Claims 1 to 10 (Family: none)	1, 17-21, 25-28
A	JP, 2000-58123, A (Sony Corporation), 25 February, 2000 (25.02.00) (Family: none)	1, 17-19, 25-28
P, X	JP, 2000-268861, A (Sanyo Electric Co., Ltd.), 29 September, 2000 (29.09.00), Claims 1 to 5 (Family: none)	1, 10-12, 17-19, 25-28

**DERWENT-ACC-NO: 1999-458184**

**COPYRIGHT 1999 DERWENT INFORMATION LTD**

**TITLE: Production of electrolyte for lithium cells, with low water and reduced free acid contents, useful for lithium cells, particularly secondary type**

**----- KWIC -----**

**TIX:**

**Production of electrolyte for lithium cells, with low water and reduced free acid contents, useful for lithium cells, particularly secondary type**

**ABTX:**

**NOVELTY - A method for removing water and free acids in an electrolyte for lithium cells comprises heating a solvent of 1 or more organic solvents with not more than 100 ppm water content to vaporize water and solvent while blowing an inert gas into it to lower the water content, and dissolution of a lithium electrolyte at a temperature not more than 20 deg. C.**

**ABTX:**

**DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an electrolyte for lithium cells obtained by the method with water content not more than 3 ppm and contents of free acids of not more than 1 ppm, calculated by c n v r s i n**

---

into hydrofluoric acid.

**ABTX:**

**USE** - The electrolytes are applicable in the production of lithium cells, particularly the secondary type.

**ABTX:**

**ADVANTAGE** - With the electrolytes, it is possible to make lithium cells with less problems of lowering charge and discharge cycle characteristics and corrosion to the cell interior.

**TTX:**

**PRODUCE ELECTROLYTIC LITHIUM CELL LOW WATER REDUCE  
FREE ACID CONTENT USEFUL  
LITHIUM CELL SECONDARY TYPE**